KL

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,267	07/13/2001	Victor Chornenky	P894 US	2731

7590 04/18/2002

IP Legal
Medtronic AVE, Inc.
3576 Unocal Place
Santa Rosa, CA 95403

EXAMINER
GEMMELL, ELIZABETH M

ART UNIT	PAPER NUMBER
2882	Restart

DATE MAILED: 04/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/905,267	Applicant(s) CHORNENKY, VICTOR
	Examiner Beth Gemmell	Art Unit 2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-14 and 16-20* is/are rejected.

7)☒ Claim(s) *6 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim1-5, 7-14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chornenky et al (U.S. Patent 6,069,938) in view of Tarr (U.S. Patent 6,249,565).

Chornenky et al. discloses an apparatus that supplies voltage pulses from a voltage source to the an x-ray emitter (fig 1, 101) with the applied voltage being adjusted by stabilizing the actual dose rate (column 3, lines 3+), a current integrator (fig 1, 113), connected to a current sensor (fig 1, 111), which measures the current though the x-ray emitter a plurality of times per second (column 7, lines 47+) and a voltage sensor (fig 1, 115) connected to a controller. The controller (fig 1, 109) is connected to the x-ray emitter and adjusts the actual dose rate by correcting for tissue radiation absorption, an increased target area and irradiation depth (column 7, lines 1+). In order to determine the actual dose rate, the instant current values are integrated over time to find the accumulated charge (column 4, line 23+).

Chornenky et al fails to disclose a controller that determines an actual dose rate based on a received current sensor signal and a received voltage sensor signal, which measured the voltage signal through the x-ray emitter a plurality of times per second,

and adjusts a supplied voltage to allow the actual dose rate, which is calculated a plurality of times per second, to match a predetermined dose rate selected by an operator. It also fails to disclose comparing a desired dose rate to the actual dose rate and matching the actual dose rate to the desired dose rate and implementing the entire process using a computer.

Tarr discloses a computer controlled system (column 3, lines 60+ and fig 1, 100) having a controller that determines an actual dose rate based on a received current sensor signal and a received voltage sensor signal and adjusts a supplied voltage to allow the actual dose rate, which is calculated a plurality of times per second (column 1, lines 29+), to match a predetermined dose rate (column 1, lines 54+) selected by an operator (therapist, column 3, line 60). It also discloses the comparing of a desired dose rate to the actual dose rate and matching the actual dose rate to the desired dose rate (abstract, lines 9+).

One of ordinary skill in the art at the time the invention was made would have be motivated to combine the system disclosed by Chornenky et al with the teachings of Tarr because in using a computer to control the system the process can become more uniform, causing the patient to be exposed only to the amount of radiation deemed necessary by the operator. By implementing a controller that determines an actual dose rate based on a received current sensor signal and a received voltage sensor signal and adjusts a supplied voltage to allow the actual dose rate to match a predetermined dose rate into the system disclosed by Chornenky et al achieves more

accurate control of radiation delivery without requiring significant and expensive hardware device changes and/or redesign (column 1, lines 63+).

It would also be obvious to one skilled in the art at the time the invention was made to measure the voltage signal though the x-ray emitter rather than the current because since the impedance is constant, if either current or voltage is found, voltage or current can easily be calculated using the relationship of: voltage = current * resistance.

Regarding the measuring of current, voltage, and actual dose rate a plurality of times per second, it would be obvious to one skilled in the art at the time the invention was made to implement this measurement because the accuracy of the therapy is crucial to the patient. If the patient is subjected to too much radiation, it would expose healthy cells to harmful radiation. If the patient is subjected to too little radiation, not all of the cancerous cells will be exposed to the radiation, failing to destroy them, and allowing the cancerous cells to multiply again.

Allowable Subject Matter

Claims 6 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Though the prior art discloses an apparatus that supplies voltage pulses from a voltage source to the an x-ray emitter with the applied voltage being adjusted by

stabilizing the actual dose rate, a current integrator, connected to a current sensor, which measures the current though the x-ray emitter a plurality of times per second and a voltage sensor connected to a controller it fails to teach or disclose the method of calculating the actual dose rate with the following equation:

$D = f * I * (V - V_o)^2$; where

D= actual dose rate at a distance r from the emitter

f = a constant

I= a current though the x-ray emitter

V = a voltage applied across an anode and a cathode

V_o= a constant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

emg
March 14, 2002

David P. Porta
Primary Examiner